

OPTIMIZED INTERNET ADVERTISING USING HISTORY TO SELECT SITES

Field of the Invention:

The present invention relates to computer networks and more particularly to a system and method for presenting advertisements on the screens of computers that are connected to the Internet.

Background of the Invention:

As used herein the term viewer refers to an individual who views or looks at a web page using a program such as one of the commercially available web browsers. Co-pending patent application serial number 08/787,979 filed 1/22/97 entitled "Internet Advertising System" describes a system for presenting advertisements to viewers who access web sites on the Internet (i.e. the World Wide Web). The present invention is an improvement to the system shown in the above referenced patent application

The Hyper Text Transfer Protocol (HTTP) and the Hyper Text Mark Up Language (HTML) provide a mechanism whereby one web site can easily link to a remote server.

The HTTP mechanisms for referencing and obtaining material from a remote server is useful in providing advertising material for display to viewers. There are commercially available systems that provide advertising material for web sites from a central server. Various web pages have links to this central server. With such an arrangement, when a viewer accesses a particular web page, a central server provides an advertisement that the viewer sees on the web page.

Using standard HTTP facilities it is possible to track when a particular viewer accesses a web site and thus it is possible to compile a data base which in essence provides a

the view-op were from a viewer who had recently visited a particular web page and one cent for the same view-op if the viewer had not recently visited the particular web page. Yet another example of a parameter that could be specified in a proposed bid is the rate at which viewers "click" on an advertisement to obtain more information about what is shown in the advertisement. The rate at which viewers "click" on an advertisement to access another site linked to the advertisement is often referred to as the "click-through rate". The bidding parameters can be either simple or complex.

With the system shown in the co-pending application when a view-op arises, the system evaluates the characteristics of the view-op compared to the specifications of proposed bids. Next, the bid selection logic selects the highest bid from the various available bids and the advertisement that has the highest bid for the particular view-op is displayed.

Summary of the Present Invention:

The present invention is applicable to a system that includes: (a) a web server system which stores advertisements and data bases, (b) bidding agents which submit bids to display advertisements in view-ops which have certain specifications, and (c) bid selection logic which decides which bid to accept for each particular view-op. With the present invention when a view-op occurs which meets the specifications in a bid, the view-op is further evaluated in terms of the comparative effectiveness of the particular advertisements on each of the sites on which the advertisement was previously displayed. The frequency of the advertisement is increased on sites that have proved effective and decreased on sites that have a lower effectiveness. The present invention thus adds an additional parameter that is considered and evaluated on a real time basis to determine if a particular advertisement should be displayed in response to a particular

view-op. This additional parameter takes into consideration the effectiveness of this particular advertisement on the sites where it was previously displayed.

Brief Description of the Drawings:

Figure 1 is a prior art system diagram.

Figures 2A and 2B are flow diagrams of the operations of the prior art system.

Figures 3A and 3B are flow diagrams of the present invention.

Description of a preferred embodiment:

The present invention is an improvement on the type of prior art system shown and described in co-pending patent application serial number 08/787,979 filed 1/22/97 and entitled "Internet Advertising System" which is assigned to the same assignee as is the present application. The above referenced co-pending application is hereby incorporated herein by reference in its entirety. In order to explain the principles of the present invention, a simplified overall block diagram of the prior art system is shown in Figures 1 and a simplified block diagram of the operation of the prior art system is shown in Figures 2A and 2B.

After the operation of the overall prior system is described with reference to Figures 1, 2A, and 2B the preferred embodiment of the present invention will be described with reference to Figures 3A and 3B. The present invention relates to an improvement in the bid selection logic 16C that is shown in Figure 1.

The system shown in Figures 1 operates as follows: A human viewer 10 utilizes a client web browser 11 to access a web page 12 on a web site 14. The web page 12 is transmitted to browser 11 in a conventional manner. Web page 12 includes an HTML

that has accessed at least three financial oriented web sites within the last five days. When a view-op occurs which is initiated by a viewer 10 who has accessed three financial oriented web sites in the last five days, bidding agents 30A and 30B would determine that the particular view-op satisfies the criteria specified by both advertisers. Both bids would be submitted to bid selection logic 16C, and bid selection logic 16C would then select the highest bid, and the advertisement specified by that advertiser would be displayed to the viewer. The criteria specified by the advertisers may be much more complex and involve many more parameters than those given in the simple example specified above. However, notwithstanding the complexity of the proposed bids and the number of parameters specified in each proposed bid, the basic operations performed by bidding agents 30 and by bid selection logic 16C are as illustrated in the above simple example.

As shown in Figure 2B, a cycle of operation begins (block 210) when a viewer 10 selects a web page 12 which has a HTML reference to web server system 16, that is, when a view-op occurs. It is noted that this occurs in real time and it can take place thousands of times per second. Block 211 indicates that the web server system 16 sends information concerning the view-op and related information in the database 16B to the bidding agents 30. The bidding agents 30 compare the information about the view-op to the proposed bids that have been submitted by advertisers. That is, the bidding agents 30 determine if the characteristics of the view-op meet the criteria in the proposed bids and if so they submit bids to bid selection logic 16C (block 213). As shown by block 214, the bid selection logic 16C compares various bids and selects the highest bid and therefore an advertisement for display. The appropriate advertisement called for by the winning bid is then sent from database 16A to browser 11 (block 215).

12, which in turn has an HTML reference to a file (i.e. an advertisement) stored on a server such as advertising server system 16.

The present invention provides an additional parameter that is taken into account in determining which advertisement will be displayed in response to a particular view-op. The additional parameter provided by the present invention is a parameter that is based upon the effectiveness of a particular advertisement on a particular web site in comparison to the effectiveness of this same advertisement on the other web sites where it has been displayed. The following highly structured and simplified example illustrates the operation of the present invention. The operation of the invention as applied to a "real-world" situation will be explained later.

Consider the following situation: an advertiser wants to have an advertisement displayed 10,000 times per day for a 10 day period (that is, 100,000 time) in response to view ops that meet certain criteria.

For this example assume:

- (a) that the advertiser bids ten cents for each of these view-ops.
- (b) that view-ops that meet the specifications in the bid are on average occurring on 1000 sites at a rate of 40 view-ops per day per site.
- (c) that the view-ops occur evenly spaced during the day and that the view ops occur in an even stream from the sites. That is the view-ops occur in an orderly sequence such as site1, site2, site3.....site 1000, site 1, site2, site3,site 1000.
- (d) that for the view-ops on 500 of these sites, some other advertiser has a higher bid.

Thus there will be 500 sites, each receiving 40 view-ops per day which fit the ad's criteria and where this advertiser's bid is the highest bid.

The selection criteria for sites A is set to 100 percent.

The selection criteria for sites B is set to 80 percent

The selection criteria for sites C is set to 50 percent

The selection criteria for the remaining sites is set to 10 percent in order to continue gathering data from these sites for future calculations. The percentages of all sites is chosen so that at the present rate of view-ops, the total view-ops specified in the bid will be reached in the desired time period.

The above calculation is re-made each time a new viewing opportunity is presented. Thus in the example given above the calculation is made approximately ninety nine thousand times. It should be noted that sites not used for advertisements as a result of the calculations made as described above are made available to the next lower bidder and that in the placement of advertisements on these sites, the process described above is repeated.

It might seem that with the present invention a great deal of calculating is made in order to determine which advertisement should be placed in response to a view-op. However, it should be considered that in practice advertisers pay up to a few cents for presenting particular advertisements on particular sites. With modern day computers the cost of making the type of calculations required by the present invention are in the range of or less than mills (i.e. tenths of a cent) rather than cents

The present invention optimizes the placement of advertisements, that is, advertisements are placed on sites where they are most effective. As described above,

advertisement is scheduled for display at least ten thousand times. Thus the initialization period can extend for up to ten percent of the times that an advertisement is displayed. It is however, noted that in practice, most Internet advertisements are displayed many more than 1000 times, thus, the initialization process takes much less than ten percent of the total view-ops. The length of the initialization period is arbitrary, so long as it is long enough to give some valid data to use in the initial calculations.

During the initialization period the results achieved by each advertisement in the form of "click throughs" is evaluated. As previously explained, while the present embodiment utilizes "click throughs" as a measure of the effectiveness of an advertisement in certain situations other measurements could be used. For example, in a situation where an advertisement results in a request for literature, the number of requests for literature could be a measure. Other measures of the effectiveness of advertisements could also be devised.

After the initialization period the process continues as shown in Figure 3B. The series of steps shown in Figure 3B is performed as each view-op that meets a bid's specification becomes available. The steps shown in Figure 3A and 3B will now be explained in detail.

The steps shown in Figure 3A are performed during the initialization period. As indicated by blocks 301, 303 and 305, when a view-op becomes available, its properties are compared to the properties set out in the various bids, and the highest matching bid is selected. Next as indicated by block 307, a determination is made as to whether or not this view-op is needed to meet the schedule set out in the winning bid. If it is not needed, this view op is assigned to the next lower matching bid as indicated by block 309. If it is needed to meet the schedule, a check is made to determine if the

1 While the invention has been shown and described with respect to a preferred
2 embodiment thereof, the scope of the applicant's invention is limited only by the
3 appended claims. Various changes in form and detail can be made without departing
4 from the spirit and scope of the invention.